

Alexander Rossi Miller

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Residence United States of America

Positions Held

- 2017–2020 Member, University of Vienna, Austria
- 2017 Visiting Scholar, Institut Henri Poincaré, Paris, France
- 2014–2017 J. L. Doob Research Assistant Professor, University of Illinois, USA

Education

- 2013 Ph.D. in Mathematics, University of Minnesota, USA
- 2007 B.S. in Mathematics, University of Minnesota, USA

Research Interests

Combinatorics, representation theory, and algebra. In particular: algebraic and topological aspects of combinatorics; real and complex reflection groups; combinatorial representation theory.

Preprints

- 19. **The characters of symmetric groups that depend only on length**
Alexander R. Miller
Submitted
- 18. **On roots of unity and character values**
Alexander R. Miller
Submitted
- 17. **Congruences in character tables of symmetric groups**
Alexander R. Miller
Submitted

Publications

- 2021 16. **On Foulkes characters**
Alexander R. Miller
Mathematische Annalen **381** (2021) 1589–1614
- 2021 15. **The sparsity of character tables of high rank groups of Lie type**
Michael J. Larsen and Alexander R. Miller
Representation Theory **25** (2021) 173–192
- 2020 14. **Many zeros of many characters of $GL(n, q)$**
Patrick X. Gallagher, Michael J. Larsen, and Alexander R. Miller
International Mathematics Research Notices (IMRN), to appear

- 2019 13. **Dense proportions of zeros in character values**
Alexander R. Miller
C. R. Math. Acad. Sci. Paris **357** (2019) 771–772
- 2019 12. **Character restrictions and reflection groups**
Eugenio Giannelli and Alexander R. Miller
Journal of Algebra **531** (2019) 336–348
- 2019 11. **On parity and characters of symmetric groups**
Alexander R. Miller
Journal of Combinatorial Theory Series A **162** (2019) 231–240
- 2018 10. **Walls in Milnor fiber complexes**
Alexander R. Miller
Documenta Mathematica **23** (2018) 1247–1261
- 2018 9. **Orthogonal polynomials and Smith normal form**
Alexander R. Miller and Dennis Stanton
Monatshefte für Mathematik **187** (2018) 125–145
- 2017 8. **Some characters that depend only on length**
Alexander R. Miller
Mathematical Research Letters **24** (2017) 879–891
- 2015 7. **Eigenspace arrangements of reflection groups**
Alexander R. Miller
Transactions of the American Mathematical Society **367** (2015) 8543–8578
- 2015 6. **Foulkes characters for complex reflection groups**
Alexander R. Miller
Proceedings of the American Mathematical Society **143** (2015) 3281–3293
- 2014 5. **The probability that a character value is zero for the symmetric group**
Alexander R. Miller
Mathematische Zeitschrift **277** (2014) 1011–1015
- 2014 4. **Reflection arrangements and ribbon representations**
Alexander R. Miller
European Journal of Combinatorics **39** (2014) 24–56
(*Ph.D. Thesis*, 2013)
- 2013 3. **Differential posets have strict rank growth: a conjecture of Stanley**
(Positively answers 25-year-old question of R. P. Stanley from 1988 in JAMS)
Alexander R. Miller
Order **30** (2013) 657–662
- 2011 2. **Note on 1-crossing partitions**
M. Bergerson, A. Miller, A. Pliml, V. Reiner, P. Shearer, D. Stanton, N. Switala
Ars Combinatoria **99** (2011) 83–87

- 2009 1. **Differential posets and Smith normal forms**
 Alexander R. Miller and Victor Reiner
Order **26** (2009) 197–228

Conference Proceedings

- 2018 1. **Milnor fiber complexes and some representations**
 Alexander R. Miller
 in “Topology of Arrangements and Representation Stability”, pp. 43–123,
Oberwolfach Reports **15** (2018)

Conferences and Lectures

- 2021 Mar Combinatorics Seminar, University of Southern California, Los Angeles, USA
 2020 Feb Bern–Neuchâtel–Fribourg Intercity Seminar, Universität Bern, Switzerland
 2019 Sep Austrian Mathematical Society Conference, Dornbirn, Austria
 2019 Jan Combinatoire Énumérative et Analytic, Université Paris Diderot (Paris 7), France
 2018 Nov Einstein Workshop on Algebraic Combinatorics, Freie Universität Berlin, Germany
 2018 May Algebra & Representation Theory Seminar, University of Cambridge, UK
 2018 Mar Séminaire Lotharingien de Combinatoire, Institut Camille Jordan, Lyon, France
 2018 Mar Arbeitsgemeinschaft für Diskrete Mathematik, Technische Universität Wien, Austria
 2018 Jan Topology of Arrangements and Representation Stability, Oberwolfach, Germany
 2017 Dec Algebraic and Enumerative Combinatorics, SFB Statusseminar, Strobl, Austria
 2017 Nov Algebra und Algebraischen Kombinatorik, Leibniz Universität Hannover, Germany
 2017 Sep Séminaire Lotharingien de Combinatoire, Bertinoro, Italy
 2017 May Midwest Combinatorics Conference, University of Minnesota, Twin Cities, USA
 2015 Oct Enumerative Algebraic & Geometric Combinatorics, AMS Session, Chicago, USA
 2013 Mar Algebraic Combinatorics, AMS Special Session, Oxford, USA
 2012 Oct Combinatorics Seminar, University of Minnesota, Twin Cities, USA
 2012 May Combinatorics Seminar, University of Minnesota, Twin Cities, USA
 2010 Apr Combinatorial Representation Theory, AMS Special Session, St. Paul, USA
 2009 Jan Algebraic Combinatorics Seminar, Fields Institute, Toronto, Canada
 2008 Mar Combinatorics Seminar, University of Minnesota, Twin Cities, USA

Journals and Conferences Refereed

2010 – Advances in Applied Mathematics
Algebraic Combinatorics
Discrete and Computational Geometry
Discrete Mathematics
Electronic Journal of Combinatorics
Formal Power Series and Algebraic Combinatorics
Journal of Algebraic Combinatorics
Journal of Combinatorial Theory Series A
Journal für die reine und angewandte Mathematik (Crelle's Journal)
Order, a journal on the theory of ordered sets and its applications
Proceedings of the American Mathematical Society
SIAM Journal on Discrete Mathematics

Teaching Experience

Courses taught at the University of Illinois (as postdoctoral instructor)

2016 Fall Calculus III Honors (Math 241)
2016 Fall Nonlinear Programming (Math 484)
2016 Spg Conjugate Duality and Optimization (Math 589)
2016 Spg Nonlinear Programming (Math 484)
2015 Fall Nonlinear Programming (Math 484)
2015 Spg Nonlinear Programming (Math 484)
2014 Fall Fundamental Mathematics (Math 347)

Courses taught at the University of Minnesota

2014 Spg Introduction to Modern Algebra (Math 4281)
2013 Fall Calculus II (Math 1272)
2013 Sum Applied Linear Algebra (Math 4242)
2011 Fall Calculus II (Math 1272)
2011 Sum Applied Linear Algebra (Math 4242)
2009 Sum Calculus I (Math 1271)

Recitations led at the University of Minnesota

2014 Spg CSE Linear Algebra and Differential Equations (Math 2373)
2012 Fall Linear Algebra and Differential Equations (Math 2243)
2010 Spg Calculus I (Math 1271)

2010	Spg	Honors Calculus II (Math 1572H)
2009	Fall	Honors Calculus I (Math 1571H)
2009	Spg	Sequences, Series, and Foundations: Writing Intensive (Math 3283W)
2008	Fall	Sequences, Series, and Foundations: Writing Intensive (Math 3283W)
2008	Spg	Honors Calculus IV (Math 2574H)
2007	Fall	Honors Calculus III (Math 2573H)

Teaching Awards

2008	Apr	<i>John Bowers Excellence in Teaching Assistance Award</i> , University of Minnesota. “...honors an outstanding teaching assistant who has demonstrated exceptional interest and commitment to the teaching of IT [Institute of Technology] students.”
2008	Feb	<i>Institute of Technology TA Award</i> , University of Minnesota. “...one of three TA’s that was voted best TA in the Institute of Technology. The voting was done completely by students in the Institute of Technology.”